

## Durham Research Online

---

### Deposited in DRO:

17 July 2013

### Version of attached file:

Accepted Version

### Peer-review status of attached file:

Unknown

### Citation for published item:

Borys, J-M. and Le Bodo, Y. and Jebb, S.A. and Seidell, J.C. and Summerbell, C. and Richard, D. and De Henauw, S. and Moreno, L.A. and Romon, M. and Visscher, T.L.S. and Raffin, S. and Swinburn, B. and Group, and the EEN Study (2012) 'EPODE approach for childhood obesity prevention : methods, progress and international development.', *Obesity reviews.*, 13 (4). pp. 299-315.

### Further information on publisher's website:

<http://dx.doi.org/10.1111/j.1467-789X.2011.00950.x>

### Publisher's copyright statement:

The definitive version is available at <http://onlinelibrary.wiley.com/>

### Additional information:

---

### Use policy

The full-text may be used and/or reproduced, and given to third parties in any format or medium, without prior permission or charge, for personal research or study, educational, or not-for-profit purposes provided that:

- a full bibliographic reference is made to the original source
- a [link](#) is made to the metadata record in DRO
- the full-text is not changed in any way

The full-text must not be sold in any format or medium without the formal permission of the copyright holders.

Please consult the [full DRO policy](#) for further details.

**Title:** EPODE approach for childhood obesity prevention: methods, progress and international development

**Authors:** J.-M. Borys<sup>1</sup>, Y. Le Bodo<sup>1</sup>, S.A. Jebb<sup>2</sup>, J.C. Seidell<sup>3</sup>, C. Summerbell<sup>4</sup>, D. Richard<sup>5</sup>, S. De Henauw<sup>6</sup>, L.A. Moreno<sup>7</sup>, M. Romon<sup>8</sup>, T.L.S. Visscher<sup>3,9</sup>, S. Raffin<sup>10</sup>, B. Swinburn<sup>11</sup> and the EEN Study Group\*.

**Affiliations:**

<sup>1</sup> EPODE European Network Coordinating Team, Proteines, Paris, France

<sup>2</sup> MRC Human Nutrition Research, Elsie Widdowson Laboratory, Cambridge, UK

<sup>3</sup> Institute of Health Sciences, Faculty of Earth and Life Sciences, VU University Amsterdam, The Netherlands

<sup>4</sup> School of Medicine and Health, Durham University, UK

<sup>5</sup> Quebec Heart and Lung Institute, Quebec, Canada

<sup>6</sup> Ghent University - Department of Public Health, University Hospital, Gent, Belgium

<sup>7</sup> GENUUD “Growth, Exercise, NUtrition and Development” Research Group, School of Health Sciences (EUCS), University of Zaragoza, Spain.

<sup>8</sup> Department of Nutrition, Faculty of Medicine, Lille, France

<sup>9</sup> Research centre for the prevention of overweight Zwolle, VU-Windesheim, Zwolle, The Netherlands

<sup>10</sup> Link-Up, Paris, France

<sup>11</sup> WHO Collaborating Centre for Obesity Prevention, Deakin University, Melbourne, Australia

**\* EEN Study Group:**

- M. van Koperen, Institute of Health Sciences, Faculty of Earth and Life Sciences, VU University Amsterdam, The Netherlands
- J. van Assche, Centre for Sustainable Development, Centre for Local Politics, Research Unit on Nutrition and Food Safety, Gent University, Belgium
- G. Vicente-Rodríguez, GENUD ‘Growth, Exercise, Nutrition and Development’ Research Group, Faculty of Health and Sport Science (FCSD), Department of Physiotherapy and Nursing, Universidad de Zaragoza, Spain
- L. Gracia-Marco, GENUD ‘Growth, Exercise, Nutrition and Development’ Research Group, Department of Physiotherapy and Nursing, School of Health Science (EUCS), Universidad de Zaragoza, Spain

**Keywords:** Obesity, Prevention, Children, EPODE.

**Running title:** EPODE approach for childhood obesity prevention

**EEN public grant:** Directorate General for Health and Consumers (European Commission, Agreement 2007 327). **EEN private partners’ grants:** Ferrero International, Mars, Nestlé S.A, Orangina-Schweppes Group.

**Corresponding author:**

Jean-Michel Borys

EPODE European Network Director

PROTEINES, 11 rue Galvani. CP: 75017. Paris, France.

Phone: +33 1 42 12 28 32

Fax: +33 1 42 12 01 85

[jmborys@gmail.com](mailto:jmborys@gmail.com)

## **ABBREVIATIONS**

BMI: Body Mass Index

CBI: Community-based Interventions

CCT: Central Coordination Team

EPODE: Ensemble Prévenons l'Obésité Des Enfants

EEN: EPODE European Network

FLVS: Fleurbaix Laventie Ville Santé Study

IASO: International Association for the Study of Obesity

IOTF: International Obesity Task Force

NGOs: Nongovernmental Organizations

OECD: Organisation for Economic Co-operation and Development

PPP: Public-Private Partnership

WHO: World Health Organization

## ABSTRACT

Childhood obesity is a complex issue and needs multistakeholder involvement at all levels to foster healthier lifestyles in a sustainable way. “**Ensemble Prévenons l’Obésité Des Enfants**” (EPODE, *Together Let’s Prevent Childhood Obesity*) is a large-scale, coordinated, capacity-building approach for communities to implement effective and sustainable strategies to prevent childhood obesity. This paper describes EPODE methodology and its objective of preventing childhood obesity.

At a central level, a coordination team, using social marketing and organisational techniques, trains and coaches a local project manager nominated in each EPODE community by the local authorities. The local project manager is also provided with tools to mobilise local stakeholders through a local steering committee and local networks. The added value of the methodology is to mobilise stakeholders at all levels across the public and the private sector. Its critical components include political commitment, sustainable resources, support services, and a strong scientific input – drawing on the evidence-base – together with evaluation of the programme.

Since 2004, EPODE methodology has been implemented in more than 500 communities in 6 countries. Community-based interventions are integral to childhood obesity prevention. EPODE provides a valuable model to address this challenge.

## 1. INTRODUCTION

The prevalence of overweight and obesity has increased worldwide during the last 30 years (1-6). Although there are signs of stabilisation in children in some age groups in certain countries (7, 8), large-scale, effective prevention of overweight and obesity remains a pressing public health priority given the adverse impact on health and quality of life in childhood (9-12) and the increased risk of obesity and associated health complications in adulthood. Nearly two thirds of children with obesity will continue to suffer from the condition throughout their adult life (13).

There is a clear need to bridge the gap between awareness of the problem and practical implementation of necessary lifestyle changes. Over the past 10 years, several studies have provided evidence that the prevention of obesity in children is possible through interventions aimed at modifying eating habits and increasing physical activity (14-16).

Of particular note is a long-term school-based nutrition education programme – the Fleurbaix Laventie Ville Santé study (FLVS). This study was initiated in 1992 in two towns in the north of France – Fleurbaix and Laventie. (In 1991 the two towns totalled 6,500 inhabitants). This was followed by a number of intervention programmes over the following 12 years (17). A comparison population was selected from two other towns, also situated in northern France and of similar demographic and socio-economic characteristics. The FLVS study showed a substantial decrease in the prevalence of overweight in children (1992: 11.4% in FLVS and 12.6% in the 2 comparison towns  $p=0.6$ ; 2004: 8.8% in FLVS and 17.8 % in the 2 comparison towns  $p<0.0001$ ) although it was 8 years before the decline in prevalence became apparent. A key

learning from this study was that the intervention programme was effective across all socio-economic levels (17). However, it was apparent that interventions targeting schools alone were not sufficient, and that progress was only made when the mobilisation of the population became more generalised at community level and involved schools, pre-schools, local sports and parents associations, catering structures, health professionals, elected representatives and local stakeholders from the public and private sectors (17). The process evaluation of the intervention in FLVS identified four critical pillars for a large-scale community-based intervention. These “4 pillars” formed the basis of EPODE methodology (further discussed in section 2.2 below).

EPODE was first launched in 2004 in 10 French pilot communities, in line with official French guidelines on diet and physical activity (18). EPODE has since expanded to more than 500 communities worldwide. EPODE methodology promotes the involvement of multiple stakeholders at two levels: 1) at a central level (ministries, health groups, nongovernmental organisations (NGOs), and private partners); and 2) at a local level (political leaders, health professionals, families, teachers, local NGOs, and the local business community) (19).

Monitoring and evaluation are crucial for the success of the programme. EPODE practices include outcome measurements, together with process and output indicators at central, local, and individual levels.

The EPODE European Network (EEN), involves four European Universities: the Free University of Amsterdam (The Netherlands), the University of Ghent (Belgium), the University of Lille 2 (France), and the University of Saragossa (Spain) as well as an

Interventional Scientific Advisory Board. Since 2008, the EEN has been working to enrich EPODE methodology and disseminate practical experience in the implementation of similar initiatives in other countries (20).

The aim of this paper is to provide a detailed description of EPODE methodology, including its broad and overarching approach to strengthening and enriching community-based interventions (CBIs) aimed at preventing childhood obesity.



## 2. EPODE STRUCTURE AND METHODOLOGY

### 2.1. *Definition*

EPODE is a coordinated, capacity-building approach aimed at reducing childhood obesity through a societal process in which local environments, childhood settings and family norms are directed and encouraged to facilitate the adoption of healthy lifestyles in children (i.e. the enjoyment of healthy eating, active play and recreation).

EPODE philosophy is based on multiple components, including a positive approach to tackling obesity, with no cultural or societal stigmatisation; step-by-step learning, and an experience of healthy lifestyle habits, tailored to the needs of all socio-economic groups.

Primary EPODE target groups are children aged 0–12 years and their families. Local stakeholders are also targeted. Through initiatives and a long-term programme, stakeholders foster and promote healthy lifestyles in families in a sustainable manner.

### 2.2. *Objectives*

The Fleurbaix Laventie Ville Santé study identified four critical factors which now form the 4 pillars of the EPODE methodology:

1. **Political commitment:** Gaining formal political commitment at central and local levels from the leaders of the key organisation(s), which

influence national, federal or state policies as well as local policies, environments and childhood settings;

2. **Resources:** Securing sufficient resources to fund central support services and evaluation, as well as contributions from local organisations to fund local implementation;
3. **Support services:** Planning, coordinating, and providing the social marketing, communication and support services for community practitioners and leaders;
4. **Evidence:** Using evidence from a wide variety of sources, to inform the delivery of EPODE and to evaluate process, impact and outcomes of the EPODE programme.

Building on the lessons learnt from the FLVS study and other successful community-based interventions, EPODE methods have evolved from 2004 as a result of a heuristic process and continuous improvement dynamics. The methods described here have been shaped over six years of implementation in France. Throughout the paper, the use of the term “central level” refers to a country although in some instances, this may be a state or a region; “local level” refers to a community, which can mean a town, part of a larger city, a village or collection of villages.

### *2.3. Stakeholders*

In each country, EPODE fosters both a “top-down” leadership and a “bottom-up” mobilisation of support (see Figure 1). EPODE methodology promotes the involvement of multiple stakeholders at central level (e.g. with endorsement from ministries, and

support from health groups, NGOs, and private partners) and the programme benefits from the expertise and guidance of an independent Expert Committee (a group of specialists and academics from different fields, playing an advisory role to the central coordination of the programme).

To put EPODE methodology into practice, a Central Coordination Team (CCT), using social marketing and organisational techniques, trains and coaches local project managers appointed in each community by the mayor (or other local leader able to champion the programme). The role of the local project manager is to mobilise a wide diversity of local stakeholders (see Appendix 1), especially in schools, pre-schools, extracurricular organisations and any social network of associations, which are key settings to implement activities with children and families. For this purpose, the local project manager coordinates a multifaceted local steering committee of local representatives from various fields (elected representatives, heads of municipal services, school professionals, and local partners). This committee meets on a regular basis to make key decisions, foster the implementation of activities and actions, and generate peer-to-peer dynamics.

#### *2.4. Principles*

EPODE pillars have been sub-divided into ten EPODE implementation principles, which describe the EPODE methodology:

1. Each country (or region) commits to a central coordination support/capacity;
2. Each local community has a formal political commitment for several years from the outset;

3. Each local community has a dedicated local project manager with sufficient capacity and cross-sectoral mandate for action;
4. A multistakeholder approach is integral to the central and local structures and processes;
5. An approach to action is planned and coordinated using social marketing. This is specifically to define a series of themed messages and actions, informed by evidence, from a wide variety of sources, and in line with official recommendations;
6. Local stakeholders are involved in the planning processes and are trusted with sufficient flexibility to adapt actions to local context;
7. The “right message” is defined for the whole community. However, getting the message “right” means tailoring for different stakeholders and audiences;
8. Messages and actions are solution-oriented and designed to motivate positive changes and not to stigmatise any culture or behaviours;
9. Strategies and support services are designed to be sustainable and backed by policies and environmental changes.
10. Evaluation and monitoring are implemented at various levels. This is achieved through the collection of information on process, output and outcomes indicators, and informs the future development of the programme.

## *2.5. Organisation*

### *2.5.1 At central level*

In each country, the EPODE programme has to be endorsed by central public authorities (ministries) and scientific organisations. This is critical to ensure that the programme is consistent with official recommendations and policies on diet, physical activity and health. To ensure the overall management of the programme at central level, EPODE is coordinated in each country or state by the Central Coordination Team which brings together skills related to public health issues, from social marketing to network

organisation, professional training, general public communication and press relations. The CCT is also in charge of advocacy for the programme at central level and coordination of the evaluation and monitoring scheme (see Box 1).

The CCT operates with the advice of a multidisciplinary committee of independent experts in the fields of paediatrics, nutrition, psychology, physical activity, marketing, sociology, health communications and educational methods. Its role is to provide essential scientific support to the programme especially in defining priority topics for action, monitoring and evaluation.

In order to ensure the sustainable mobilisation of human and technical resources at central level, the CCT is responsible for a long-range budgetary plan. The distribution of expenses at central level is related to the diversity of activities. This is also managed by the CCT.

Using the example of the EPODE programme in France, as detailed in Figure 2.A (226 communities involved to date), principal costs are usually related to staff (6 people being employed full time). Direct costs are dedicated to the development of materials (website, newsletters, communication and mobilisation materials). Resources may come from public, private or mixed funds. Financial resources should ideally be provided from the public sector so that no commercial conflicts of interest arise. However, if insufficient public funding is available, the setting up of the programme should not be postponed if appropriate private funds can be mobilised. In some countries, private grants are of longer term (5 years at least), than public grants, which is an advantage for the sustainability of the programme. Governance rules should be made clear to preserve

the public health goal and prevent possible conflicts of interest. If a private partner is involved, the relationship is governed by a long-term commitment charter, which guarantees mutual respect and trust for each party.

Private partners need to commit to: 1) not intervening in the programme's content; 2) not associating the EPODE programme with any promotion of a product brand; 3) for the purposes of communication, only referring to the relationship as part of a corporate social responsibility commitment. (The CCT organises regular meetings with all funders involved at central level); 4) not displaying a logo of partners on any EPODE materials distributed in schools and other local childhood settings (as set out in recent recommendations by WHO and the International Obesity Task Force (IOTF) set up by the International Association for the Study of Obesity (IASO) (21, 22).

#### 2.5.2 At local level

Local administrations (education, health, sports, culture etc.) will be more likely to become involved in the EPODE programme if it is perceived as a way to reach objectives set by the national public health strategy (H Bergeron et al., unpublished data). The commitment to EPODE must result from strong local political willingness to support and launch the project. Each community that is committed to the EPODE programme signs a long-term commitment charter (see Box 2).

Besides the municipal health services, many other departments, such as communication, educational and community life, sports, social affairs and community-planning are encouraged to become involved. EPODE offers the opportunity to develop a cross-

municipal strategy, for each department to play a part, and to adapt certain professional practices and the local facilities and services delivering public health goals.

Local authorities ensure a significant and sustainable funding contribution for the local organisation (See Figure 2.B), especially through the appointment of an EPODE local project manager, working in the field with a cross-cutting remit intended to foster local group dynamics (see Box 3). The local project manager takes responsibility for managing the multidisciplinary local steering committee of professionals, in order to foster positive peer-to-peer dynamics and accelerate the implementation of local actions by a wide variety of local stakeholders (see Appendix 1).

The local project manager benefits from the political support of an elected representative of the community council who is a local decision maker and spokesperson for the programme. This leader takes charge of facilitating the involvement of all municipal departments, the establishment of local partnerships and the implementation of actions. EPODE communities may also benefit from financial or “in-kind” resources from private partners to implement specific projects or activities. They may also benefit from public grants awarded at the federal, national, state or regional level for the implementation of local activities. Private contributions to the budget vary according to the particular community, and this presents challenges in indicating an average budget.

An economic evaluation, which takes into account cross-cutting human resources mobilised for the project at local level (e.g. time invested by health professionals or

teachers) is complex, since the philosophy of the EPODE methodology is to involve local stakeholders on a voluntary basis as part of their daily professional activities.

## *2.6. Implementation*

In recent years, social marketing techniques have become widespread in community-based obesity prevention programmes to promote healthier behaviours. Previous reviews have shown that interventions using these techniques can achieve positive changes in risk behaviours (23, 24). Individual cognitive-based strategies alone are unlikely to create sustainable behaviour changes, thus the aim of EPODE is to generate change to the social and physical environment, as well as individual education and personal change. From various existing frameworks (25, 26), the social marketing approach of EPODE can be presented through different steps (see Figure 3).

### *2.6.1 Structured input process*

The CCT receives inputs from multiple sources, such as official recommendations, expert consultation, and literature reviews. Field experience from EPODE teams also contributes. From the objectives and priority themes identified, campaigns of six to nine months are planned. Each campaign highlights one specific theme at a time related to food and/or physical activity habits. The inputs identify barriers and levers for behaviour change among different target groups, as well as the evidence support for, and feasibility of, actions to be implemented.

### *2.6.2 Raising awareness*



This process leads to the development of a mix of techniques and tools aimed at advocacy for the programme at central and local levels (see Table 1). For each EPODE campaign developed once or twice a year, communication tools are developed at central level in collaboration with local stakeholders and the expert committee. These tools are printed and disseminated in the communities, so that they directly reach the children and families. They focus on simple and solution-orientated key messages, and motivating positive behaviour changes without stigmatisation. These tools have exciting execution elements, and colourful visuals, using cartoon characters adapted to appeal to children. They also include practical information adapted for parents (27). At the national level, a press office maintains contact with journalists and organises interviews and broadcasts. This ensures a substantial amount of press coverage of EPODE actions at central level and in the communities. (In 2009 there were 450 press clippings relating to the French EPODE programme.)

### 2.6.3 Empowerment of the local project manager and local stakeholders

The Central Coordination Team visits each EPODE site at least once a year for specific follow up and coaching and for local communication purposes. Regular training sessions for the local project manager are also organised at a central level three times a year, based on the themed campaigns. Capacity-building documents (see Table 1) are delivered to the local project manager during these sessions and help to foster local dynamics (e.g. partnerships and networks), empower local stakeholders to initiate local projects and activities (roadmaps, adaptable action sheets), develop local communication and press relations, and collect information on evaluation indicators

(e.g. BMI measurements). The local project managers also have continuous contact with the CCT for advice on projects and actions to be initiated with local stakeholders (see Box 4). An annual EPODE congress encourages shared experiences and networking.

#### 2.6.4 Changing environments

Local actions to change the local environments are also maintained throughout the year, although these may not be directly related to the ongoing EPODE campaign. These changes are planned through activities that are often pilot tested before being transferred and adapted to other communities and organised in a sustainable manner. The process is facilitated through the development of EPODE action sheets that provide practical information for the replication of the projects, such as information on budget, human and technical resources, process and timing etc. (see Table 1). Examples of these include the optimisation of the school catering service, as well as changes to physical environments, such as the rearrangement of school playgrounds, the installation of multisport courts in neighbourhoods, the development of baby gym facilities and activities, and improvements to the “walkability” of the town.

#### 2.7. *Creating the EPODE brand*

To bring visibility and a sense of ownership, it is critical to create a singular brand whose features match the EPODE philosophy. This entails establishing central components to make EPODE stakeholders feel part of a common positive initiative, and to foster group dynamics and long-term commitment. For local stakeholders, it can be a lever to legitimise their action and involvement, and highlight a portfolio of initiatives

under the same umbrella brand. The branding of EPODE materials also facilitates recognition of the programme by key “ambassadors” as well as the general population, and creates a strong visual consistency across all communities.

## *2.8. Monitoring and Evaluation*

EPODE evaluation and monitoring is implemented at various levels through the collection of information on process indicators (e.g. central partnerships, local steering committee meetings), output indicators (e.g. the number of local actions, participation of families and children) and outcome indicators (e.g. changes in dietary habits, childhood obesity prevalence) (see Table 2).

### *2.8.1 Anthropometric measurements*

The monitoring and evaluation approach has so far included the collection of data on weight and height of all children (28). BMI data allow international comparisons (29) which is not the case for other adiposity markers in children (e.g. waist circumference or skin folds). BMI data collection in children is also a key driver for politicians (since obesity prevalence is the principal goal for the EPODE methodology), but also for the mobilisation of stakeholders at central and local levels. These data highlight the efforts and activities carried out and help to ensure a good media coverage of the programme.

### *2.8.2 Process and Output indicators*

The EPODE monitoring and evaluation approach complies with the recommendations by Doak et al (14) who investigated school-based obesity programmes worldwide. An enhanced framework – including input, activities, and output indicators – is now being established, based on learning from the academic literature and the experience within EPODE communities. “Input” reflects all inputs required to support the programme, such as funding, partnerships, network, policy, knowledge and materials. “Activities” reflect all action steps needed to produce the programme outputs, such as information, community development, advocacy, and intersectoral action. “Output” reflects everything directed at consumers or the target population, such as communication materials, courses, and services.

### 2.8.3 Dissemination of results

Main results of evaluations are reviewed at the central level by the Expert Committee (depending on the set programme goals and programme objectives), and are then communicated to the local project manager or mayor of each community. They, in turn, are encouraged to communicate the outcomes at local level to both the general public and the stakeholders. Results are also communicated to partners at the central level and further disseminated through presentations at congresses and conferences, publications, and to the media. The central coordination also provides assistance in linking media to designated EPODE sites when necessary.

### **3. EPODE PROGRESS AND INTERNATIONAL DEVELOPMENT**

From a process designed by an EPODE International Coordination team, EPODE programmes were launched in 2006 in Spain and in Belgium (THAO and VIASANO Programmes, respectively). Similarly in 2008 a programme was established in Greece (PAIDEIATROFI Programme), and more recently in South Australia (OPAL Programme) and Mexico (EPODE–5 PASOS Programme) (see Table 3).

More than 500 communities across the world are now part of the programme, and in France, five years after its launch, 90% of the original EPODE pilot communities are still active (see Figure 4). Initiatives in other countries, such as the JOGG programme in the Netherlands (30) or the Healthy Weight Communities in Scotland (31) have been inspired and influenced by EPODE methodology.

The purpose has been to promote the core EPODE methodology in new countries or states, taking into account the particular political, cultural, scientific and administrative specificities, while ensuring that the approach is in accordance with EPODE principles.

#### *3.1. Resource mobilisation*

The EPODE mobilisation of resources differs according to each country. This is due to the central coordinating entity determining the way resources are mobilised at both central and local levels, and the percentage of public and private funds that are channelled to the programme. EPODE resources at central level mainly come from either the support of corporate partners (as for VIASANO and PAIDEIATROFI),

Government sources (as for OPAL and 5 PASOS), or both (as for EPODE France, THAO) (see Table 3).

The annual budget at central level differs from one country to another, although in each case resources are planned to ensure coordination for 3 to 7 years, depending on the country. It is noteworthy, however, that the budget of the coordination team in France increased only slightly over 5 years, while the population size covered by the programme increased significantly: Estimations for 2004: a budget of €450,000 for 500,000 inhabitants (i.e. approximately €1/year/inhabitant). Estimations for 2009: a budget of €1 million for 4 million inhabitants (i.e. approximately €0.25/year/inhabitant).

### *3.2. Social marketing campaigns*

While some campaigns are replicated from one country to another (see Appendix 2), the methods and social marketing process must be adapted to recognise specific barriers and utilise appropriate levers and opportunities for behaviour changes in each country.

### *3.3. Evaluation practices*

To date, all EPODE programmes have initiated continuous monitoring and evaluation practices at central, local and child levels, as well in certain settings such as schools (see Table 2 and Appendix 3). Developing consistent practices and collecting comparable data across communities and programmes remains an important challenge.

In EPODE communities in France, a long-term collaboration with the Ministry of National Education makes it possible to involve school health professionals in the collection of weight and height data. This contribution is critical when considering the time and human resources necessary for such data collection. In the THAO programme, local team members (especially health professionals, students or research teams) collect data. In PAIDEIATROFI communities where it proved difficult to perform measurements in schools, alternative settings such as sports clubs or health centres are used. In Belgium, BMI data for the entire population of children are collected, and although official authorisations have to be renewed regularly to have access to the data, with three different communities using different methods, the screening of overweight and obesity is thus made easier in VIASANO communities. This approach gives the evaluation team access to comparison samples, while in Spain, the THAO coordination teams recently integrated 19 control communities and in Australia OPAL is using matched communities for comparison. Comparison with national surveys is also a possibility, as has been adopted in France.

## **4. DISCUSSION AND FUTURE CHALLENGES**

The EPODE methodology has been described in terms of its 4 pillars: 1) Political commitment; 2) Resources; 3) Support services; 4) Evidence. For each pillar, the discussion section below highlights the achievements of EPODE and its future developments.

### *4.1. Political commitment*

To have any chance of success, it is commonly observed that local authorities have to engage in the EPODE programme on a voluntary basis. As noted in a recent research study, the continuous and long-term implementation of activities in communities, together with the support of local political will, is critical for successful institutionalisation of the EPODE programme at local level (H. Bergeron et al, unpublished data).

To be involved in the programme, French communities often contact the EPODE CCT. An active policy of recruitment is often not necessary since the reputation of EPODE travels through peer-to-peer awareness (especially through elected representatives), official reports and the media. In addition, mayors of the first ten French pilot towns have created an independent NGO called “Club des Maires EPODE” (EPODE mayors’ club), which meets twice a year to share experiences as well as to raise awareness of the EPODE methodology with - other mayors. This organisation aims to develop awareness of the importance of political leadership within EPODE, to foster cross-sectoral mobilisation of politicians and civil servants in each community, and to share examples of successes and failures. All the communities joining the programme in France are now invited to be part of this NGO.



Politicians can be strong advocates of the programme at regional/state or national/federal levels and can mobilise many partners, networks of associations and private actors. As EPODE mayors and Members of Parliament, they can also mobilise their peers for amendments related to the food and physical activity environments. Conversely, if the elected representatives are not heavily involved initially, there may be a lower recognition of the actions undertaken by the local stakeholders, and thereafter a lower interest in getting involved. It is important to involve elected representatives from different political parties to provide continuity in the event of political turnover.

Apart from political leadership, the appointment of a project manager in each community is a compulsory commitment. There is no standard community size to implement EPODE, however, if necessary the project manager can be assisted by sub-project managers in some areas (e.g. in the city of Paris, a global project manager has been hired for an area of 3 districts and approximately 2 million inhabitants, while each individual district has its own project manager).

This particular model has raised questions regarding the politicians' motivation for involvement. Whilst in part the answer may be re-election, it is also apparent that they are responding to the expectations of their voters to find solutions to the recognised problem of obesity. In that sense, childhood obesity prevention can be seen as a deserving and common challenge across political borders, and engaging in EPODE could appear to be a relatively cheap and visible solution. For elected representatives, EPODE is a tangible way to improve health, tackle social inequalities, and foster physical environment changes in the community.

It is noteworthy that while the timeframe for action may be short for politicians (they need immediate visibility and results), it is longer for scientists (32) and this can become a point of tension. Another potential point of discord is the timeframe for dissemination of results. Politicians frequently expect short-term communications, highlighting the success they may have in their own community without considering issues of the statistical significance of their local results. Nonetheless, measurements of obesity prevalence in the community may be a good opportunity to reinforce awareness of the childhood obesity issue, legitimise the action and encourage mobilisation of resources.

#### *4.2. Resources*

Public–private partnerships (PPP) are one of the mechanisms through which healthy lifestyle promotion initiatives are addressing the childhood obesity problem worldwide (33, 34). Public–private partnerships in EPODE can be seen as an “organisational cooperation project” in which different skill sets are brought together.

For public partners and nongovernmental organizations, PPPs contribute to the sustainability of EPODE and other similar programmes, especially from the funding provided. For private partners, PPPs are important for corporate social responsibility and public relations by building trust among consumers and political authorities. However, the additional value is not only in terms of money; at a local level, building action with local private partners (supermarkets, local companies, producers, retailers etc.) can lead to a synergy of micro-actions and may provide financial means, specific skills or “in-kind” resources (e.g.

equipment). Communication regarding their support to the programme can only occur at local level, and cannot be related to the promotion of any brand or product. However, public parties sometimes see the private sector as threatening because it is perceived to be motivated mainly from a profit perspective, which is thought to conflict with health promotion activities. Furthermore, the public sector may be afraid of losing its integrity and independence when partnering with the private sector, which may cause conflicts of interest. The private sector may perceive the public sector as bureaucratic, politically dependent and slow moving, which may be more visible where programmes are entirely public funded. The private sector may also consider that its own commitment is not sufficiently highlighted. Another risk can arise if the private partners at national and local levels are different. This may create tension among private partners.

Public–private partnerships may also present different opportunities and risks to both parties. In the literature, both negative and positive considerations are being expressed and suggestions have been made to develop new kinds of PPPs in public health (35-39).

A committee of the EEN project, supported by the European Commission (DG Health and Consumers) from 2008 to 2011, is developing recommendations for the PPP management in EPODE (20, 40).

#### *4.3. Support services*

The determinants of obesity at a population level are complex (41). Conscious and unconscious behaviours related to diet and physical activity are inter-related across levels and

sectors. Accordingly, intervention requires multi-level, multi-sectoral and multi-stakeholder preventive strategies (42).

Behavioural models have proven to be valuable frameworks for the design of successful health promotion programmes (43) and support the argument that the family and environment are crucial for the development of food and taste preferences, patterns of food intake, eating styles, activity preferences etc., that shape children's weight status (44). The EPODE methodology aims to empower local stakeholders, giving them sufficient trust and flexibility to operate, at local level, tailoring their actions based on the profile and needs of the population. EPODE support services aim to create the necessary conditions in families for the sustainable dissemination of messages and implementation of change so that healthier behaviours can be adopted.

These services include a broad range of activities at central level (advocacy, partnership management, training and coaching of local project managers, development of social marketing campaigns, press relations, monitoring and evaluation etc.) and at local level (political leadership, steering of projects, coordination of actions, data collection, communication etc.). In particular, social marketing is an important component of the EPODE methodology. This is in contrast to public health programmes that have often been based on the capacity of individuals to give rational consideration to the recommendations they are given. Growing evidence indicates that interventions using social marketing principles can be effective and promising (23, 25, 45, 46) and core communication principles should also be considered (27). Accordingly, the core principle is to make changes easier, popular, and sometimes humorous. The motivation should be built on actual insight and direct benefit for

the target audience, based upon issues that touch their emotional perceptions. Changes in the social environment, through the creation of network dynamics by involving all possible stakeholders is another core element of the methodology, which has shown to be effective in many different settings (26, 47).

While positive dynamics can be observed in EPODE communities as a result of these activities (e.g. long-term commitment of local authorities, satisfaction of local stakeholders, good participation rates of the population), the nature and characteristics of chain reactions leading to best impact in the field in terms of behaviour changes still needs to be more fully documented.

Research by OECD (48) indicated that “key drivers of success” of preventive interventions include high participation (in supply and demand), long term sustainability of effects, ability to generate social multiplier effects (e.g. through the involvement of stakeholders in “different forms of dialogue and partnerships” and “effective channels of communication”) and a combination of multiple interventions.

In order to have a deeper insight into EPODE methods, the EEN has initiated descriptive research of EPODE central and local coordination mechanisms, underpinning positive outcomes and challenges (20, 40).

#### *4.4. Evidence*

Concrete, practical and effective implementation of EPODE methodology requires the use of multiple sources of evidence such as on-going scientific reviews, consultation with experts, interviews with local project managers, pre-testing of messages, monitoring and evaluation of actions at all levels.

Monitoring the evolution of dietary and physical activity habits in children is carried out in an increasingly comprehensive way, but sample size, consistency, accuracy, reliability and availability of human resources to submit questionnaires remain challenges. Existing frameworks are available in order to learn and understand how cognitive and environmental determinants work and could act as potential moderators or mediators between underlying causes and energy-balance related behaviours (49, 50). If resources are available, additional research could use data from these questionnaires as a basis to tailor interventions (specific subgroups such as ethnic minorities or high-risk groups), to study determinants, and to compare changes in body composition and health behaviours within and between EPODE-communities.

In order to be able to monitor EPODE as a standardised approach, the future aim for EPODE communities is to have as a minimum a standardised set of questions in an EPODE-questionnaire on energy-balance related behaviours and determinants.

A great deal is still to be learnt from community-based interventions, and the broad and sophisticated EPODE methodology with its enormous reach and potential impact, provides strong opportunities, not only to collect data, but also to monitor and evaluate the EPODE methodology within and between EPODE communities and programmes.

A future challenge to the EPODE monitoring and evaluation framework is to define which indicators all EPODE communities should include, together with a more flexible set of indicators which may vary across EPODE-communities. The importance of the monitoring tools to be chosen and the value of items in the EPODE questionnaires should be shared by local project leaders and partners. This is due to monitoring requiring a certain level of intrinsic motivation that exists only when practitioners realise that their programmes will be more effective and reach more people if they are able to adjust and improve their programmes on the basis of available data.

The evaluation and dissemination framework needs to be flexible and dynamic, with consideration for the feasibility in the field and that includes core and optional components. Most importantly it should be used as a stimulus for local EPODE teams and their members to adapt and change the programming where needed and/or appropriate. Future research and evaluation needs to take into consideration whether other evaluation designs are similarly useful, or indeed, whether they are a better alternative to the classic randomised controlled trial design.

## 5. CONCLUSION

EPODE is the largest global childhood obesity prevention programme. The theory behind EPODE methodology reflects the multi-factorial approach important in the prevention of childhood obesity. The 4 pillars show the core components of the approach and help to explain why EPODE has been able to reach this scale. Early evaluation of the EPODE methodology suggests encouraging results (28). Further important lessons are to be learnt from a detailed evaluation of EPODE. Childhood obesity prevention programmes, which aspire to have a wide reach, may benefit from the insights into the EPODE methodology. Already EPODE is referenced in several national and international reports, position papers and conferences as an innovative example of a community-based project aimed at promoting healthy behaviours in children (19, 51-64). Further insights will follow from the standardisation of actions and monitoring across all EPODE programmes around the world.



## Boxes

### **Box 1. Summary of the role of the EPODE Central Coordination Team**

- Advocacy for commitment and resource mobilisation across federal/national/state/regional stakeholders: experts, ministries, health professionals, sports groups, scientific groups, nongovernmental organisations, economic players (private companies, producers);
- Contact with candidate communities and agreement with local political leaders;
- Initial and ongoing training, coaching and experience-sharing sessions for the local project managers;
- Development of tools and materials based on social marketing to define themed messages, actions and stimuli:
  - Methodological tools for the local project managers,
  - Mobilisation tools to be transmitted to the local stakeholders,
  - Communication tools to be disseminated at local level;
- External communication about EPODE through a communications plan which includes newsletters, a website, media commentary, presentations, and publications;
- Coordination of the programme evaluation and monitoring;
- Coordination of the scientific team activities and evidence for social marketing themes;
- Coordination of the leadership support activities such as the Mayor's Club.

### **Box 2: Main community commitments to the EPODE programme**

Each community committed to the EPODE programme signs a charter in which it agrees:

- To be involved in the programme for at least 4 years;
- To appoint a councillor as a representative of the Town Council;
- To appoint a local project manager who will be the primary contact for the Central Coordination Team and will have the assignment of coordinating the programme at local level;
- To comply with the programme's philosophy and basic principles;
- To ensure that a dietician and physical activity teacher (or an activity leader with physical activity skills) are involved at various stages of the programme;
- To print and distribute the information and communication documents supplied by the Central Coordination Team to the target groups concerned (action sheets, general public information leaflets, posters, etc.);
- To build on the EPODE brand: having all new local initiatives approved by the Central Coordination Team;
- To comply with and implement possible adaptation requests made by the Central Coordination Team concerning label requests.

**Box 3: The role of the EPODE local project manager**

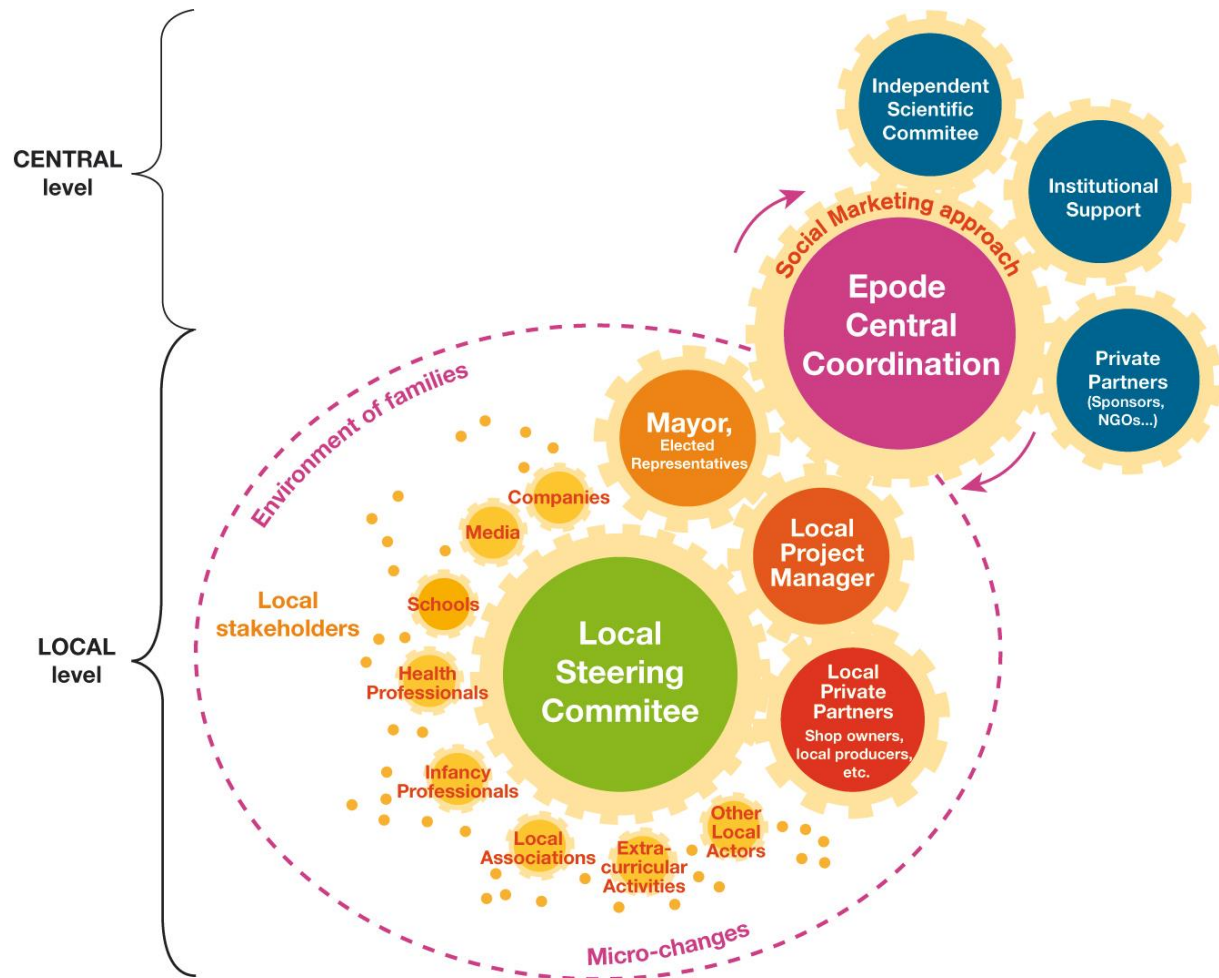
- Be the link between the Central Coordination Team, its elected representatives and local stakeholders;
- Get the steering committee members on board and involved;
- Identify local stakeholders that are deeply involved with the local population and that can serve as “ambassadors” for the EPODE programme;
- Strengthen existing initiatives as part of a network and initiate new actions;
- Advocate for the programme with the support of the municipal communication department and elected representatives;
- Get in contact with public and private partners that may fund or contribute to the project’s funding by providing equipment, human resources, techniques, etc.;
- Coordinate the local monitoring (including the measurements of children’s height and weight);
- Attend meetings that make possible the sharing of best practices with Local Project Managers of other communities;

**Box 4: Examples of actions implemented by local stakeholders. The case of the campaign “Let’s meet with the fruit” (France, 2009–2010)**

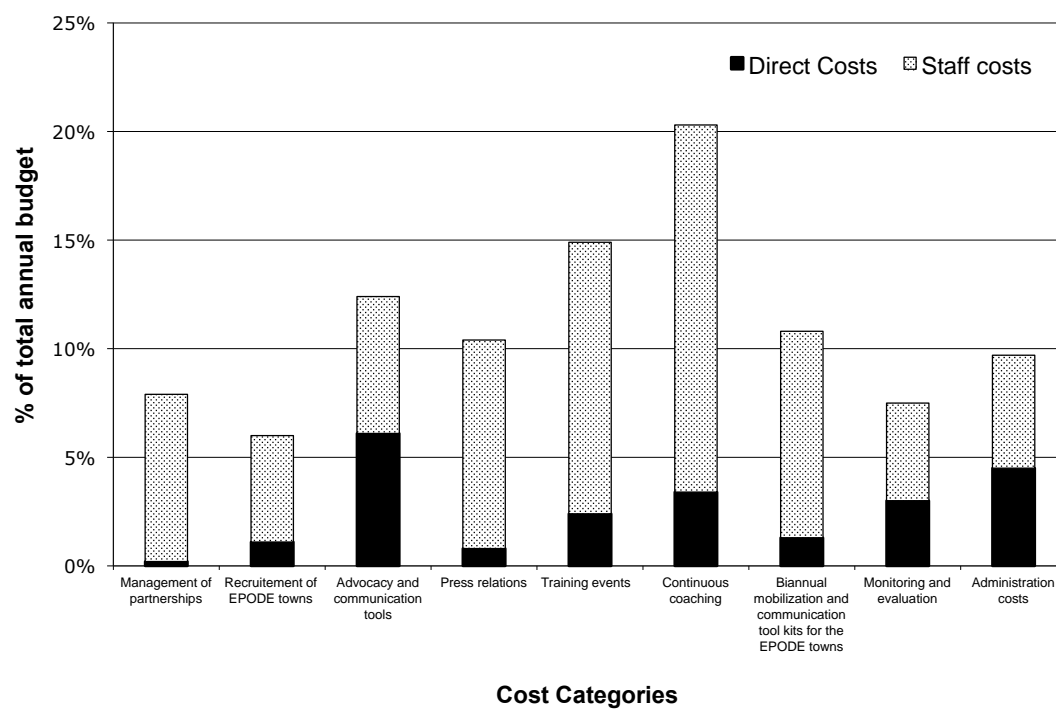
Actions may be designed and organised during the campaign. These can take the form of drama lessons and artistic contests in leisure centres, fruit tasting in market places, walking trails with fruit tasting stops with local producers, afternoon fruit snack distribution in schools, fruit taste education workshops in preschools, fruit consumption favoured during a town’s events (e.g. sports meetings and receptions), distribution of materials to families (e.g. story books, recipes, magnets, etc.). Actions can similarly be built continuously or by recurring events that provide the opportunity to promote fruit consumption (e.g. tasting and cooking workshops with families in social centres, breakfast events in schools, open days of local producers and farms, annual EPODE week of local associations for nutrition and physical activity etc.).

## Figures

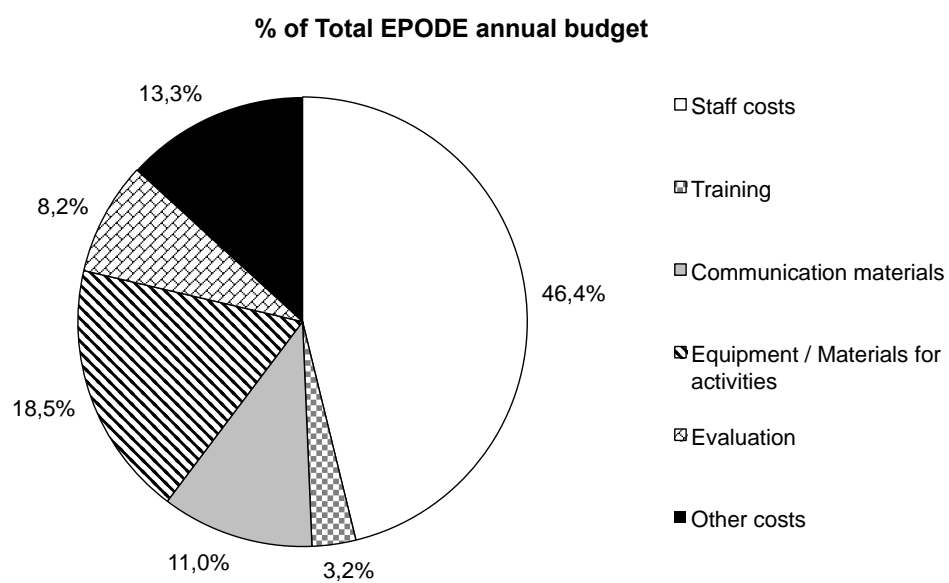
**Figure 1:** EPODE stakeholders at central and local levels



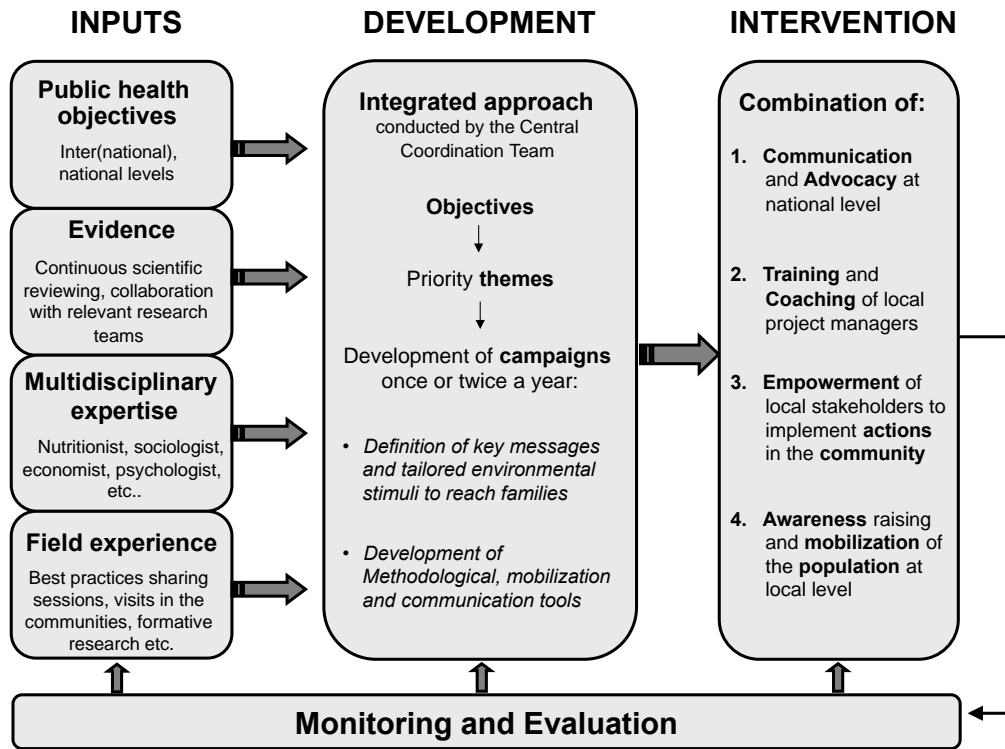
**Figure 2.A** Distribution of EPODE National Expenses (France, 2009)



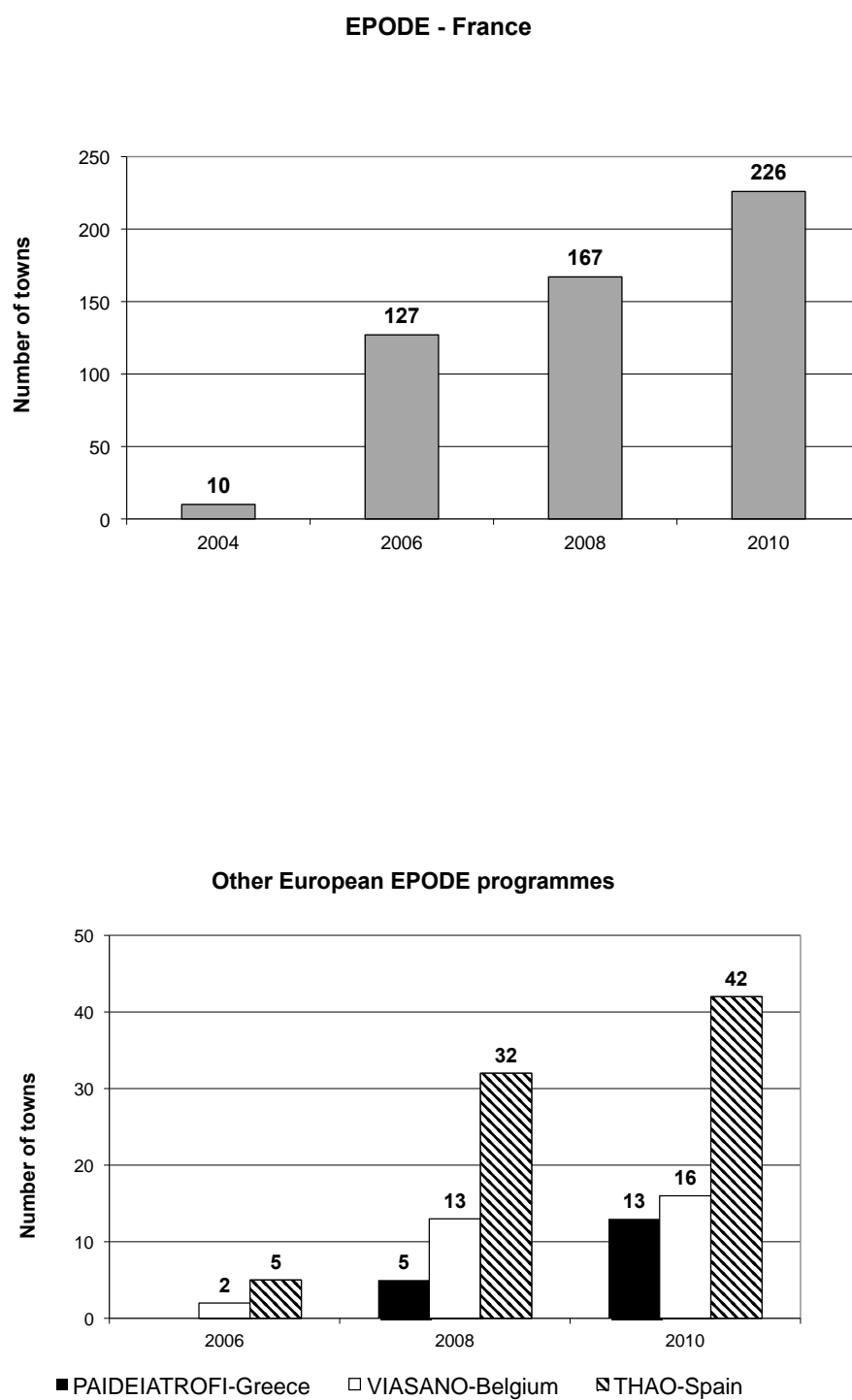
**Figure 2.B** Example of EPODE expenses distribution in a French pilot community in 2009



**Figure 3.** EPODE Social Marketing Approach inspired from various existing frameworks (25, 26)



**Figure 4.** Evolution of the number of communities involved in EPODE France and other European EPODE programmes from 2004 to 2010



**Table 1:** Overview of main EPODE tools developed at central level







TOOLS	CONCEPTION	DESCRIPTION	TARGET	DELIVERY FORMAT
<b>Methodological tools</b>  <i>LPM guidebook and roadmaps</i>	CCT	<b>LPM Guidebook:</b> reference tool. Overall description of the EPODE methodology, principles, background, stakeholders, organisation, useful contacts, etc.	LPM	Booklet delivered during the initial training session (first semester)
		<b>LPM Initial roadmap:</b> guidelines to set up the EPODE programme in the town: implementation objectives for the first months	LPM, EPODE local General Practitioner, EPODE local dietician	Booklet delivered during the initial training session (first semester)
		<b>LPM roadmaps (once to twice a year):</b> objectives, information and advice for the launching and implementation of each campaign	LPM	Booklet delivered during training sessions, every 6 to 12 months
<b>Mobilization tools</b>  <i>Actor sheets and action sheets</i>	CCT (including collection of best practices from EPODE towns), Creation Team	<b>Actor sheets:</b> reference tool - 1 sheet / local stakeholder who can play a role in EPODE, including key advice for mobilization	LPM	Folder of more than 100 sheets delivered to the LPM during the initial training session
		<b>Action sheets:</b> 10 to 15 sheets per campaign (once to twice a year), providing examples of actions and guidance to implement it	Local stakeholders: pre-school professionals, shop owners, NGOs, teachers... depending on the campaigns	Folder of 10 to 15 sheets delivered to the LPM during the training sessions - to be further disseminated to local stakeholders
<b>Awareness tools</b> <i>Poster, leaflet...</i>	CCT, Creation tools	<b>Leaflet, poster, recipe sheets:</b> reminding the motto of the campaign, providing advice and recommendations for healthier behaviours	Families	E-versions delivered during training sessions to the LPM (in charge of the dissemination in the town through schools, medical centres, supermarkets, sport associations...)
<b>Communication and Advocacy tools</b>  <i>Website, newsletter, press relations</i>	CCT, National and Local Press Relations Teams	<b>Website</b>	Whole population / EPODE stakeholders	Internet / Extranet
		<b>Newsletters</b>	Local and national stakeholders, EPODE International teams	Printed and mailed quarterly by the CCT
		<b>Press relations</b> (press coverage of EPODE campaigns, news, results, local events and actions)	The population, through national and local media (web, TV, radio, print)	Print and e-press releases, conferences
<b>Evaluation tool</b> <i>BMI data collection guidebook</i>	CCT	<b>Guidelines</b> for BMI data collection: description, organization	LPM, EPODE local General Practitioner	Booklet delivered during the initial training session (first semester)



**Table 2:** EPODE main Monitoring and Evaluation levels, indicators and tools

Level	Indicators	Data collection tools
<b>CENTRAL</b>	<ul style="list-style-type: none"> <li>- Political support at central level (institutional endorsement) and at local level (number of communities)</li> <li>- Expert advisory (amount of meetings, involvement)</li> <li>- Network/Scientific communication</li> <li>- Monitoring of human and financial resources</li> <li>- Monitoring of communities and especially LPM commitment to the programme</li> <li>- Advocacy/press relations (dissemination indicators =&gt; e.g. newsletter (number of contacts), Website (traffic), central press clips etc.)</li> <li>- Satisfaction of the LPM of the programme in general, trainings, meetings, materials</li> <li>- Labelling of new local actions</li> </ul>	<ul style="list-style-type: none"> <li>- Continuous Central Coordination Team's monitoring charts</li> </ul>
<b>LOCAL</b>	<ul style="list-style-type: none"> <li>- Profile of the LPM and characteristics of the Local Steering Committee (amount of representatives, diversity of fields)</li> <li>- Local funding</li> <li>- Training of local stakeholders</li> <li>- Methods developed or used to mobilise stakeholders and the general public</li> <li>- Dissemination of communication materials</li> <li>- Amount and type of EPODE actions labelled</li> <li>- Local publicity in the media</li> </ul>	<ul style="list-style-type: none"> <li>- Interviews with LPM in the communities</li> <li>- Satisfaction Questionnaires</li> <li>- Excel charts filled by the LPM</li> <li>- Local Reports</li> </ul>
<b>SETTINGS</b>	Stakeholders mobilisation (type, amount)	Interviews and Questionnaires submitted to the LPM
	Actions implemented on the ground (type, amount)	
	Participation by children and families in the actions	
<b>CHILD</b>	Changes in food and physical activity habits	Pilot studies, specific questionnaires administered in schools or other settings (e.g. local health centres)
	Evolution of the prevalence of childhood overweight and obesity	Weight and height measured by school health professionals and reported in spreadsheets

**Table 3:** EPODE Programmes in the world (2010)

COUNTRY or STATE	PROGRAMME ACRONYM (Meaning)	LOGOTYPE	STARTING YEAR	CENTRAL COORDINATION	NUMBER OF COMMUNITIES in 2010	CENTRAL RESOURCES in 2009
FRANCE	EPODE (Together, let's prevent childhood obesity)		2004	Fleurbaix-Laventie Ville Santé NGO	226	84% private 16% public
BEGIUM	VIASANO (Healthy Life)		2006	Protéines Health Communications	16	100% private
SPAIN	THAO Salud Infantil (Children's Health)		2006	THAO Foundation	42	70% private 30% public
GREECE	PAIDEIATROFI (Educating Children to a Balanced Nutrition)		2008	Nostus Communications and Events	13	100% private
SOUTH AUSTRALIA	OPAL (Obesity Prevention and Lifestyle)		2009	Government of South Australia	10	100% public
MEXICO	EPODE-5 PASOS (5 steps for your health)		2010	Government of Mexico	220, in progress	100% public

## Legends

### Figure 2.A

This figure represents the distribution of the annual budget of the EPODE National Coordination activities in 2009, i.e. € 981,667. The programme concerned 226 communities counting 4 million inhabitants.

### Figure 2.B

This figure represents the distribution of an annual budget of € 95,000 in an EPODE town counting 50000 inhabitants and including more than 3,000 children aged 5 to 12 whose Body Mass Index is monitored in the EPODE framework.

### Table 1

LPM=Local Project Manager; CCT=Central Coordination Team; BMI=Body Mass Index

### Table 2






LPM=Local Project Manager

## Appendices





**Appendix 1:** Categories of local stakeholders invited to be represented in the EPODE local steering committee and professionals/organisations to get involved in the community

CATEGORIES	PROFESSIONALS/ORGANISATIONS
<b>Health Professionals</b>	<b>Town or Hospital Centre specialists:</b> Pharmacist, General practitioner, Specialist physicians, Independent/Municipal dietician, Independent nurse, Midwife, Psychomotor therapist, Physiotherapist, Psychologist. <b>Occupational General practitioner</b> (Inter-company organisations or Intra-company)
<b>Local companies, retailers and producers</b>	Chamber of Commerce and Industry/Agriculture, Retailer and Craftsmen Associations, “Food” retailers or hypermarket/supermarket stands, Local producers, Restaurants (traditional, fast-food), local companies for support and a partnership in the community
<b>Political decision makers</b>	<b>Community level:</b> Mayor, Elected representatives (Urban planning, Education and school environment, Health, Social and Solidarity activities, Infancy, Transportation, Youth, Sports and Leisure, Culture), Children’s/Youth’s Municipal Council. <b>Upper levels:</b> politicians at regional, state, national/federal levels
<b>Health organisations</b>	Health Insurance Funds (Regional and Local agencies), Local and Regional Directorates for Health, Social Affairs, Youth and Sports, Family Allowance Office, Local and Regional health education and promotion associations, Regional Health Observatory, Regional Public Health Group
<b>Pre-school</b>	Maternal and Infantile Protection Services, Children’s Social Aid Services, Day care centres, day nurseries, Childminders, pre-school sports associations (e.g. Baby gym clubs)
<b>Social Network</b>	Sports associations, Charities and food relief associations, Service clubs, Educational farms, Farmer’s assistance association
<b>Local actors involved in community’s facilities</b>	Community Centres, Hospitals, health care and prevention, sports facilities (Stadiums, pools, gymnasiums, etc.), Fitness trails and courses, Cultural facilities: Youth and Cultural Centre / Neighbourhood centre, Libraries and/or multimedia centres, Museums
<b>Media and communication</b>	Local and freelance journalists, Community’s communication services
<b>Extra-curricular organisations</b>	Leisure/recreation centres (Managers, Activity Leaders)
<b>School catering</b>	School catering manager and staff, <b>If self-managed:</b> Kitchen chef and staff, <b>If sub-contracted:</b> Service company, The company’s dietician
<b>Schools</b>	Chief Education Officer, school health professionals, Education counsellors, Sport youth workers, School teachers, local authority employees specialized in nursery schools, Parent-teacher associations
<b>Other local actors</b>	<b>Universities, graduate schools and their students</b> (e.g. Public health university, Sports university, Dietetics school, Arts School, Agricultural School, Hotel and Restaurant Management schools, Agronomics Research Institute, Nursing care schools. <b>Other local bodies</b> (e.g. Regional Directorate of Food, Agriculture and Forestry)

**Appendix 2:** EPODE campaigns developed since 2004, in France (40), Spain (THAO), Belgium (VIASANO), Greece (PAIDEIATROFI) and South Australia (OPAL)

Years					
2004	<ul style="list-style-type: none"> <li>The season has the taste for <b>vegetables</b></li> </ul>				
2005	<ul style="list-style-type: none"> <li>The season has the taste for <b>starchy foods</b></li> <li>The season has the taste for <b>dairy products</b></li> <li>The season has the taste for <b>fruit</b></li> </ul>				
2006	<ul style="list-style-type: none"> <li>Let's enjoy <b>treats</b> with moderation</li> <li>We <b>move</b> and we like it!</li> <li><b>Easy, cheap</b> and <b>healthy</b> eating? It's to be cooked!</li> </ul>				
2007	<ul style="list-style-type: none"> <li>Let's enjoy <b>water</b>!</li> <li>Health starts <b>at the table</b></li> </ul>	<ul style="list-style-type: none"> <li>The season has the taste for <b>fruit</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Fruit</b> are good for us!</li> <li>Are you <b>active</b> or <b>sedentary</b>?</li> </ul>		
2008	<ul style="list-style-type: none"> <li><b>Playing</b> is already moving!</li> <li><b>Fish</b> has everything good</li> </ul>	<ul style="list-style-type: none"> <li>Let's learn about <b>water</b> and other <b>drinks</b></li> <li>Let's learn about <b>starchy foods</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Dairy</b> products, for pleasant changes!</li> <li>Be <b>active</b> as a <b>family</b></li> <li><b>Vegetables</b>, let's go for <b>more</b>!</li> <li><b>Move</b> at <b>school</b>, at <b>work</b></li> </ul>		
2009	<ul style="list-style-type: none"> <li><b>Physical activity</b>, everyone gets into it!</li> <li>Let's meet with the <b>fruit</b>!</li> </ul>	<ul style="list-style-type: none"> <li><b>Fruit</b> and <b>Vegetables</b>: 5 per day... Set the pace!</li> <li><b>Dairy products</b>, 2 or 3 per day and...let's move!</li> </ul>	<ul style="list-style-type: none"> <li>How to manage <b>sweets</b> and <b>crisps</b>?</li> <li>Be <b>active</b>, whatever the weather is!</li> <li><b>Meals</b></li> <li>Fewer <b>screens</b>, more <b>movements</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Movement</b> and Physical Exercise on a daily basis</li> <li>The season has the taste for <b>fruit</b></li> </ul>	
2010	<ul style="list-style-type: none"> <li>Small, Medium, Large: At mealtime, adapted <b>portion sizes</b> to each one</li> </ul>	<ul style="list-style-type: none"> <li>3,2,1...Let's go! <b>Physical activity</b> is fun and healthy!</li> <li>Blub, Blub, Blub... Let's dive into a healthy sea! : <b>Fish</b> and <b>seafood</b> season</li> </ul>	<ul style="list-style-type: none"> <li>Light-handed <b>fat consumption</b>!</li> <li><b>Sleep</b> / slumber</li> </ul>	<ul style="list-style-type: none"> <li><b>Breakfast</b>, my secret weapon!</li> <li>The season has the taste for <b>vegetables</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Water</b>, the original cool drink!</li> <li>Give the <b>screen</b> a rest, <b>Active play</b> is best</li> </ul>

**Appendix 3:** Data collected at child level in European EPODE programmes (*BMI=Body Mass Index*)

Programmes	Data collected/ Indicators	Frequency	Sample
	<ul style="list-style-type: none"> <li>• Evolution of children Body Mass Index (BMI) (aged 4–5 to 10–11)</li> </ul>	<p>Yearly for pilot communities, Every 2 years for others</p>	<p>50817 children (27954 from 2005 to 2009, pilot communities) 22863 from 2007 to 2008, other communities)</p>
	<ul style="list-style-type: none"> <li>• Evolution of the total subscriptions to physical and sports activities in the town</li> <li>• Changes in food and physical activity habits</li> </ul>	<p>During pilot projects or studies (2009-2010)</p>	<p>Samples of 30 to 500 children participating in specific activities</p>
	<ul style="list-style-type: none"> <li>• Evolution of children BMI (aged 4–12)</li> </ul>	<p>Every 2 years</p>	<p>5,601 children in Flanders (2008), 1,920 children in Wallonia (2008), 2,810 children in the German-Speaking Community</p>
	<ul style="list-style-type: none"> <li>• Evolution of Children BMI and Waist Circumference (13) (aged 3–12)</li> </ul>	<p>Yearly</p>	<p>BMI: 8,880 children in 2007–2008 and 1,7088 in 2008–2009 / WC: 6,632 in 2008–2009</p>
	<ul style="list-style-type: none"> <li>• Diet and Physical habits (aged 8–12)</li> </ul>	<p>Yearly</p>	<p>739 from 6 different communities and regions</p>
	<ul style="list-style-type: none"> <li>• Evolution of children BMI</li> </ul>	<p>Start and end of programme</p>	<p>In progress</p>

1. Lissau I, Overpeck MD, Ruan WJ, Due P, Holstein BE, Hediger ML. Body mass index and overweight in adolescents in 13 European countries, Israel, and the United States. *Archives of Pediatrics & Adolescent Medicine*. 2004 Jan;158(1):27-33.
2. Spurgeon D. Childhood obesity in Canada has tripled in past 20 years. *British Medical Journal*. 2002 Jun 15;324(7351):1416.
3. Wang Y, Monteiro C, Popkin BM. Trends of obesity and underweight in older children and adolescents in the United States, Brazil, China, and Russia. *American Journal of Clinical Nutrition*. 2002 Jun;75(6):971-7.
4. Kalies H, Lenz J, von Kries R. Prevalence of overweight and obesity and trends in body mass index in German pre-school children, 1982-1997. *International Journal of Obesity and Related Metabolic Disorder*. 2002 Sep;26(9):1211-7.
5. Wang Y, Lobstein T. Worldwide trends in childhood overweight and obesity. *International Journal of Pediatric Obesity*. 2006;1(1):11-25.
6. Lobstein T, Frelut ML. Prevalence of overweight among children in Europe. *Obesity Reviews*. 2003 Nov;4(4):195-200.
7. Rokholm B, Baker JL, Sorensen TI. The levelling off of the obesity epidemic since the year 1999--a review of evidence and perspectives. *Obesity Reviews*. 2010 Dec;11(12):835-46.
8. Olds T, Maher C, Zumin S, et al. Evidence that the prevalence of childhood overweight is plateauing: data from nine countries. *International Journal of Pediatric Obesity*. 2011 Aug 12.
9. Visscher TL, Seidell JC. The public health impact of obesity. *Annual Review on Public Health*. 2001;22:355-75.

10. Wang Y, Beydoun MA. The obesity epidemic in the United States--gender, age, socioeconomic, racial/ethnic, and geographic characteristics: a systematic review and meta-regression analysis. *Epidemiological Review*. 2007;29:6-28.
11. Gregg E, Cheng Y, Cadwell B, et al. Secular trends in cardiovascular disease risk factors according to body mass index in US adults. *Journal of the American Medical Association*. 2005;293:1868-74.
12. Mullis RM, Blair SN, Aronne LJ, et al. Prevention Conference VII: Obesity, a worldwide epidemic related to heart disease and stroke: Group IV: prevention/treatment. *Circulation*. 2004 Nov 2;110(18):e484-8.
13. Kumanyika S, Obarzanek E, Stettler N, et al. The Need for Comprehensive Promotion of Healthful Eating, Physical Activity, and Energy Balance. Interdisciplinary Committee for Prevention of the American Heart Association Council on Epidemiology and Prevention, 2008.
14. Doak C, Visscher T, Renders C, Seidell J. The prevention of overweight and obesity in children and adolescents: a review of interventions and programmes obesity. *Obesity Reviews*. 2006;7:111-36.
15. Katan MB. Weight-loss diets for the prevention and treatment of obesity. *New England Journal of Medicine*. 2009 Feb 26;360(9):923-5.
16. De Bourdeaudhuij I, Van Cauwenberghe E, Spittaels H, et al. School-based interventions promoting both physical activity and healthy eating in Europe: a systematic review within the HOPE project. *Obesity Reviews*. 2010;12(3):205-16.
17. Romon M, Lommez A, Tafflet M, et al. Downward trends in the prevalence of childhood overweight in the setting of 12-year school- and community-based programmes. *Public Health Nutrition*. 2009 Oct;12(10):1735-42.



18. Hercberg S, Chat-Yung S, Chauliac M. The French National Nutrition and Health Program: 2001–2006–2010. *International Journal of Public Health*. 2008;53:68-77.
19. A Strategy for Europe on Nutrition, Overweight and Obesity related health issues: Commission of European Communities, 2007.
20. Borys JM, Le Bodo Y, De Henauw S, et al. Preventing Childhood Obesity: EPODE European Network Recommendations, 2011.
21. Set of recommendations on the marketing of foods and non-alcoholic beverages to children: World Health Organization, WHO, 2010.
22. Swinburn B, Sacks G, Lobstein T, et al. The 'Sydney Principles' for reducing the commercial promotion of foods and beverages to children. *Public Health Nutrition*. 2008 Sep;11(9):881-6.
23. Evans W, Christoffel K, Necheless J, Becker B. Social Marketing as a Childhood Obesity Prevention Strategy. *Obesity*. 2010;18:23-6.
24. The « healthy living » Social Marketing initiative: a review of the evidence. Cambridge, UK: Human Research Nutrition, MRD, health Do;2007 15 March 2007. Report No.: 280163
25. French J, Blair-Stevens C. Social Marketing National Benchmark Criteria. : UK National Social Marketing Centre. 2007; Retrieved May 23, 2008.
26. Hastings G. Social Marketing. Why should the devil have all the best tunes? . Oxford UK: Butterworth-Heinemann, Elsevier; 2007.
27. Henley N, Raffin S. Social Marketing to Prevent Childhood Obesity: The EPODE Program. Waters E, Swinburn B, Uauy R, Seidell J, editors: Wiley-Blackwell; 2010.

28. Romon M, Duhamel A, Salleron J, Lommez A, Meyer J, Borys J. Évolution de la prévalence du surpoids et de l'obésité chez les enfants de 4 à 11 ans entre 2005 et 2010 dans les villes « EPODE ». *Nutrition clinique et métabolisme*. 2010;24(S1):58.
29. Cole T, Bellizzi M, Flegal K, Dietz W. Establishing a standard definition for child overweight and obesity worldwide: international survey. *British Medical Journal*. 2000;320:1240-3.
30. Programme JOGG 2010; Available from: <http://www.jongerenopgezondgewicht.nl/home>
31. Healthy Weight Communities, HWC. 2010; Available from:  
<http://www.scotland.gov.uk/Topics/Health/health/healthyweight/healthyweight>
32. Brownson RC, Royer C, Ewing R, McBride TD. Researchers and policymakers: travelers in parallel universes. *American Journal of Preventive Medicine*. 2006 Feb;30(2):164-72.
33. Kraak VI, Story M. A public health perspective on healthy lifestyles and public-private partnerships for global childhood obesity prevention. *Journal of American Dietetic Association*. 2010 Feb;110(2):192-200.
34. Huang TT, Yaroch AL. A public-private partnership model for obesity prevention. *Preventing Chronic Disease* 2009;6(A 110).
35. Curtis V, Garbrah-Aidoo N, Scott B. Masters of marketing: bringing private sector skills to public health partnerships. *American Journal of Public Health*. 2007;78(4):634-41.

36. Buse K, Walt G. Global public-private partnerships: part I - a new development in health?: World Health Organisation, 2000. Report No.: 0042-9686 Contract No.: 5.
37. Buse K, Walt G. Global public-private partnerships: part II - a new development in health?: World Health Organisation, 2000. Report No.: 0042-9686 Contract No.: 5.
38. The Oxford Health Alliance guidelines for funding and interaction with industry and other sectors: The Oxford Health Alliance, OXHA 2008.
39. Van Huijstee M, Francken M, Leroy P. Partnerships for sustainable development: a review of current literature. Environmental Sciences 2007;4(2):75-89.
40. EPODE European Network. 2009; Available from: <http://www.epode-european-network.com>.
41. Butland B, Jebb S, Kopelman P, et al. Tackling obesities: future choices: Foresight programme of the Government Office for Science, 2007.
42. The Challenge of obesity in the WHO European Region and the strategies for responses.: World Health Organization Europe, 2007.
43. Kok G, Schaalma H, Ruiter RA, van Empelen P, Brug J. Intervention mapping: protocol for applying health psychology theory to prevention programmes. Journal of Health Psychology. 2004 Jan;9(1):85-98.

44. Birch LL, Davison KK. Family environmental factors influencing the developing behavioral controls of food intake and childhood overweight. *Pediatric Clinics of North America*. 2001 Aug;48(4):893-907.
45. Gracia-Marco L, Vicente-Rodríguez G, Borys J, Le Bodo Y, Pettigrew S, Moreno L. Contributions of Social Marketing strategies to community based obesity prevention programs in children. *International Journal of Obesity*. 2010;35(472-479).
46. McDermott L, Stead M, Gordon R, et al. A review of the effectiveness of social marketing nutrition interventions: Institute for Social Marketing, University of Stirling & The Open University, 2006.
47. Kritsonis A. Comparison of change theories. *International Journal of Scholarly Academic Intellectual Diversity*. 2005;8(1).
48. Sassi F. Obesity and the Economics of prevention. *Fit not Fat. : Organization for economic co-operation and development, OECD*, 2010.
49. Kremers SP, de Bruijn GJ, Visscher TL, van Mechelen W, de Vries NK, Brug J. Environmental influences on energy balance-related behaviors: a dual-process view. *International Journal of Behavioral Nutrition and Physical Activity*. 2006;3:9.
50. Standard Evaluation Framework for weight management interventions: National Obesity Observatory, NOO2009.
51. EPODE European Network Project: Directorate General for Health and Consumers of the European Commission, DG SANCO, 2007.
52. Healthy weight, healthy lives: a cross-government strategy for England: UK Department of Health, 2007.
53. In search of the X Factor: Energy in balance. La Haye, The Netherlands: Dutch Covenant on Overweight and Obesity, 2008.
54. Prevention for a healthier America: Trust for America's Health, TFAH; February 2009.

55. Boyer V. Parliamentary Information Report – Conclusion of the Obesity Prevention Mission, 2008.
56. Future Breakthroughs in Science and Society. Falling Walls Conference; 2009; Berlin.
57. Population-based prevention strategies for childhood obesity: World Health Organization, WHO, 2009.
58. De Danne A. Committee for Obesity prevention and treatment President of the French Republic, 2009.
59. Etienne J, Bout B. Research perspectives on obesity prevention and treatment: French Parliament, 2009.
60. Achieving healthier weights in Canada's communities. In: Canada PHAo, editor. Call for proposal, 2010.
61. F as in Fat: how obesity threatens America's future.: Trust for America's Health, 2010.
62. OPAL by EPODE programme South Australia Health, SA Health; 2010; Available from:  
<http://www.health.sa.gov.au/Default.aspx?tabid=686>.
63. EPODE-5 Pasos programme (Mexico). 2010; Available from: <http://www.5pasos.org.mx/5p/ninos/ni5pa.php>.
64. Obesity: Review and evaluation of obesity prevention and treatment programmes: INSERM, 2006.